



**Pierce Ponds Off-Channel  
Habitat Project Summary**

**Prepared by the  
Fraser Valley Regional Watersheds Coalition  
Submitted to the Pacific Salmon Commission**

**May 1, 2007**

## **Abstract**

Lower Fraser coho salmon are a stock of concern in BC due to the combined pressures of land development and rapid human population growth and recent trends toward reduced marine survivals for this stock. Off-channel habitat is the key habitat type that allows coho salmon juveniles to survive winter conditions so they may successfully migrate the following spring as smolts. Land development has reduced off-channel habitat in the Chilliwack River watershed over the last 150 years and this habitat type is now thought to limit the natural productivity of coho salmon. This project helped to address this limiting factor by expanding the amount of off-channel habitat along the Chilliwack-Vedder River. More specifically, three ponds were constructed at Pierce ponds in the Chilliwack River Valley by building earthen berms to impound groundwater that seeps off Larsen's bench. These ponds were connected to each other and to Pierce creek by short spawning channels. Material for the berms and channels was excavated from a site adjacent to Slesse Creek, which created a fourth pond. In total, 15,000 m<sup>2</sup> of rearing and overwintering pond habitat was created and 480 m<sup>2</sup> of spawning habitat was created. Preliminary monitoring demonstrated that the spawning habitat was utilized by adult coho salmon and the new ponds already provide habitat for juvenile coho salmon, as well as cutthroat trout, Dolly varden char, and numerous other aquatic species. The high quality and stable habitat created through this project can be expected to produce an additional 360,000 coho salmon smolts over the 50 year life expectancy for the project.

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## Introduction

Lower Fraser coho salmon are a stock of concern in BC due to the combined pressures of land development and rapid human population growth and recent trends toward reduced marine survivals for this stock. The Chilliwack River wild coho salmon population is part of this larger Lower Fraser coho stock of concern. The health of this stock in the future will directly affect the long term viability of aboriginal, commercial, and recreational fisheries within southern BC and northern Washington State.

Although the Chilliwack River has strong numbers of hatchery produced coho salmon, wild coho salmon numbers have been declining over the past decades due to decreased marine survivals and deteriorating freshwater habitat conditions. Off-channel habitat is the key habitat type that allows coho salmon juveniles to survive winter conditions so they may successfully migrate the following spring as smolts. Land development has reduced off-channel habitat in the Chilliwack River watershed over the last 150 years and this habitat type is now thought to limit the natural productivity of this stock (EBA Engineering Consultants 2001). For example, the dyking of the historic 10 km wide floodplain of the lower Chilliwack River into a 1 km wide confined corridor, and the draining of the 14,000 ha Sumas Lake, significantly reduced the opportunity for Chilliwack River coho salmon to access off-channel winter habitat within the watershed. The primary purpose of this project was to restore the amount of off-channel habitat available for coho salmon along the Chilliwack-Vedder River closer to historic levels.

The project took place at Pierce Ponds in the Chilliwack River Valley. Pierce Ponds are formed by old logging roads and debris dams, which impound water within an isolated 2,000 m long side channel of the Chilliwack River on a bench above the present river level. Water flow into this remnant side channel originates from the nearby Larson's Bench aquifer. With its cool and consistent groundwater flows, and its location out of the present river flood plain, the abandoned side channel provides an excellent opportunity to expand the amount of off-channel habitat available for coho salmon spawning and rearing.

This high priority off-channel restoration site was first identified in the Chilliwack River Watershed Restoration Plan by EBA Engineering Consultants Ltd. (2001). Fisheries and Oceans Canada identified this site as the most cost effective restoration opportunity to improve off-channel habitat for coho salmon in the watershed. In addition, restoration of this site has been supported by agencies and individuals involved with the ongoing Watershed-based Fish Sustainability Planning process in the Chilliwack River watershed.

## Objectives

- I. Develop approximately 9,000 m<sup>2</sup> of high quality rearing and over-wintering habitat.
- II. Make 500 m<sup>2</sup> of additional spawning habitat available for use by adult coho salmon.
- III. Reconnect nearby Pierce Creek to the newly constructed spring fed ponds to allow for improved adult and juvenile coho salmon passage between these two habitats.

## Methods

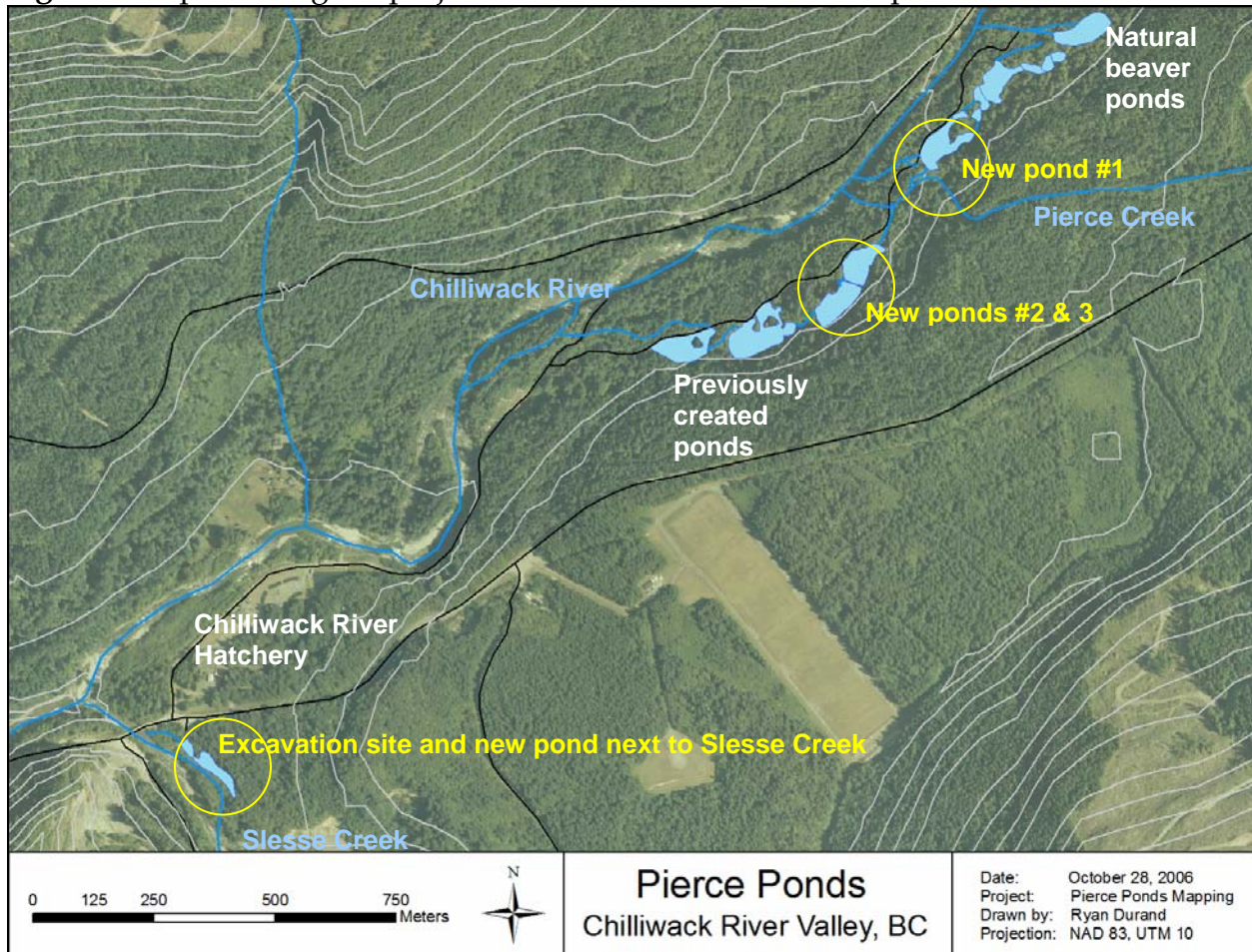
The approach utilized in this project was to excavate depressions, pools, and channels within a flat river bench and create berms at strategic locations to impound water (e.g., similar to a beaver pond). The net result is an interconnected series of large and extensive ponds and associated wetlands linked by gravel bedded riffles and small channels favoured by spawning and rearing coho salmon. The main tasks undertaken to achieve this result, and the associated timelines, are described below and summarized in Table 1.

**Table 1** Project milestones and timing

<b>Task</b>	<b>Outcome</b>	<b>Timing</b>
Survey and concept	<ul style="list-style-type: none"> <li>• A survey was completed</li> <li>• Concept designs were generated using the survey</li> </ul>	April, 2006
Final designs agreed upon	<ul style="list-style-type: none"> <li>• The site was visited by all partners</li> <li>• Final designs were agreed to by all partners</li> </ul>	May, 2006
Approvals	<ul style="list-style-type: none"> <li>• Approvals were obtained</li> </ul>	June, 2006
Project construction	<ul style="list-style-type: none"> <li>• Approximately 7,500 m<sup>3</sup> of gravel was excavated from a site next to Slesse Creek, which significantly enlarged an existing pond in the process</li> <li>• The gravel was hauled a short distance to Pierce Creek and used to improve the access road and built three berms, creating/expanding three ponds in the process</li> <li>• The three new ponds were connected to each other and to Pierce creek by short spawning channels</li> <li>• Three culverts with beaver boxes were installed</li> </ul>	June - October, 2006
Site reclamation	<ul style="list-style-type: none"> <li>• Hay was spread to control erosion and sedimentation on the most heavily disturbed sites</li> <li>• The disturbed areas at both sites were seeded with a reclamation grass mixture</li> </ul>	October, 2006
Adult spawning assessment	<ul style="list-style-type: none"> <li>• Two site visits to Pierce ponds were conducted by FVRWC to monitor project stability and salmon usage</li> <li>• Utilization of the site was also monitored by DFO</li> </ul>	November-December, 2006
Final as built survey	<ul style="list-style-type: none"> <li>• The new habitat was mapped using GPS</li> <li>• Final surveys/reports completed by DFO and FVRWC</li> </ul>	December, 2006
Juvenile monitoring	<ul style="list-style-type: none"> <li>• FVRWC staff monitored juvenile salmon utilization of the new habitat using minnow traps</li> </ul>	March, 2007

In total, three berms and ponds were constructed in this project (Figure 1Figure 2). Material for the berms was excavated from a nearby site adjacent to Slesse Creek (Figure 2a). Excavated material was hauled a short distance (e.g., 600 m) to the site using two large Volvo trucks and an old logging road (Figure 2b). An excavator and a bulldozer were used to spread the excavated material onto the road to improve access and to construct the berms. The excavator was also used to contour the land to be flooded prior to building the berms in order to ensure that there would be a diversity of habitats within the ponds (e.g., shallow and deep areas). While the berms were being built, small diversion pipes were installed to maintain the existing water flows until all berms and channels were complete.

**Figure 1** Map showing the project site and the location of new ponds created



**Figure 2** Gravel source (a) and volvo truck used for hauling gravel (b)



Following berm construction, three short spawning channels were developed at the downstream end of each pond. An excavator was used to create a path with the appropriate



grade, to line the new channels with large rock, and to build weirs within the channels as needed (Figure 3a). Gravel excavated from built-up bars in Pierce Creek was placed into the spawning channel beds, simultaneously improving spawning habitat in Pierce Creek and the new channels. Although disturbance to the site was minimal, any trees that were removed or damaged through road and berm construction were added to the ponds and channels to increase large woody debris cover (Figure 3b).

**Figure 3** Placing rock in spawning channels (a) and large wood added to channels (b)

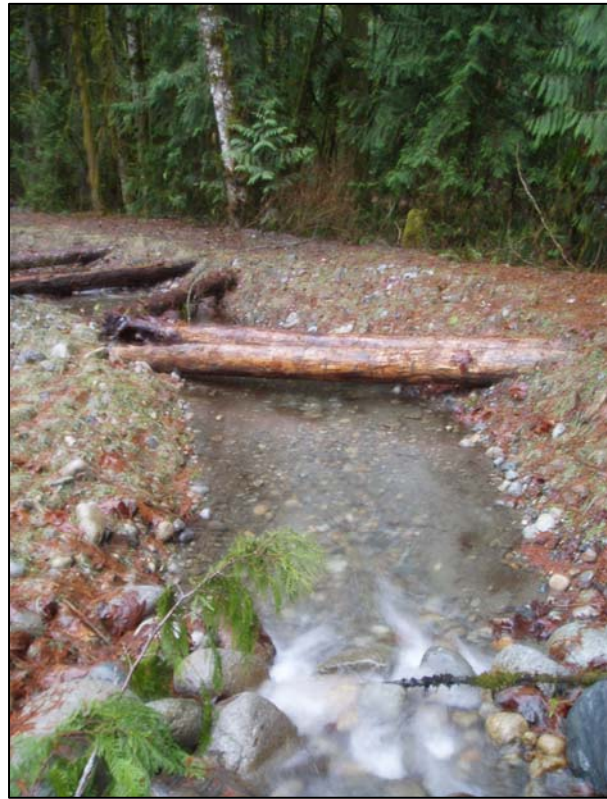


Once the berms and channels were complete, large (i.e., 4 ft) culverts were placed within the berms to provide a connection between the ponds and the spawning channels. Beaver boxes constructed on site were fit over the upstream end of each culvert to ensure that flow between the ponds and channels would not be interrupted by beaver activity (Figure 4). Rip rap lined spillways were contoured into the berms in close proximity to the culverts to ensure that the integrity of the berms, ponds, and channels would not be compromised by chance high water events. Finally, the diversion pipes were slowly sealed off to allow the new ponds and channels to fill with water over several weeks. Figures 5, 6, and 7 show the three new ponds and associated downstream spawning channels.

**Figure 4** Beaver boxes being constructed and after installation



**Figure 5** Berm, pond, and spawning channel #1

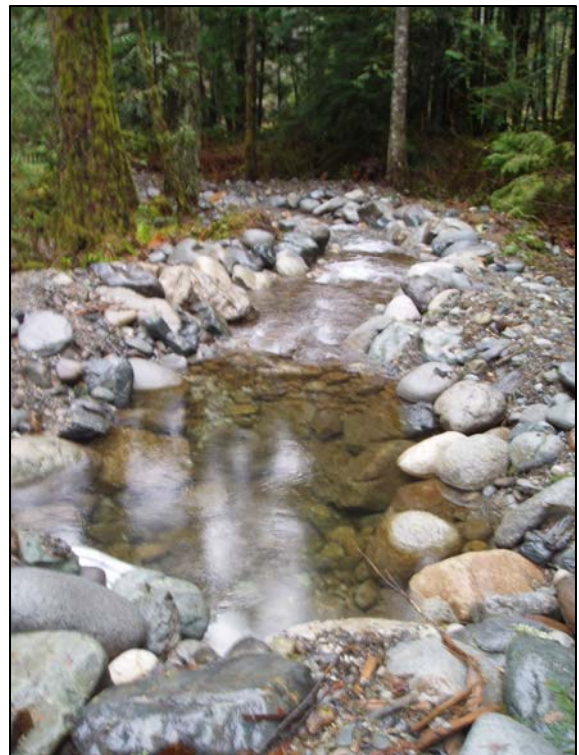




**Figure 6** Berm, pond, and spawning channel #2



**Figure 7** Berm, pond, and spawning channel #3



Supervision of the project over the summer was provided by both Fisheries and Oceans Canada (DFO) and Fraser Valley Regional Watersheds Coalition (FVRWC) staff. DFO resource restoration staff supervised physical construction of the site and FVRWC staff closely monitored the project design, progress, timeline, and budget. Both FVRWC and DFO staff maintained a library of photographs taken throughout project construction.

Post-project monitoring was also jointly conducted FVRWC and DFO staff. DFO hatchery staff conducted visual checks for adult spawning in the fall and winter. FVRWC staff visually monitored adult returns on several visits in the winter and utilized minnow traps to monitor juvenile usage of the site in early spring. This latter sampling involved placing 15 minnow traps baited with previously frozen salmon roe from the Chilliwack River Hatchery in two of the three new ponds for a 24 hour period during the week of March 23-31, 2007. One of the new ponds (pond #2) was a previously existing pond that was expanded and improved for access by coho. The other pond (pond #1) was completely new (i.e., it was previously forest). Each pond was stratified into three types of habitat (e.g., open water, large woody, and aquatic vegetation) and five traps were randomly placed into each of these habitat types. Note that traps were also placed in several older constructed ponds at the site as well as naturally formed (e.g., by beaver dams) ponds upstream of the restored site for comparison purposes. All fish caught in the traps were identified and counted, and the first 30 fish of each species caught per pond were measured (fork length).

## Results

The main objective of this project was to restore habitat for coho salmon. At Pierce Ponds, 15,500 m<sup>2</sup> of stable overwintering, rearing, and spawning habitat was created by taking advantage of a protected and naturally forested site above the current floodplain of the river with cool and consistent groundwater springs. With the exception of the culverts, pipes and beaver boxes, all materials needed to construct the ponds and channels were found in close proximity to the site, which minimized expenditures needed for project materials and maximized the amount of funding available for machine time. In order to create the berms, 7,500 m<sup>3</sup> of material (e.g., rock and gravel) was excavated from a nearby site adjacent to Slesse Creek and hauled a short distance to the site. Two hundred hours of trucking time was required to move the material, 100 hours of bulldozer time was required to distribute the material at the site, and 280 hours of excavator time was required to excavate and place material. Local contractors and businesses were utilized to the extent possible (e.g., machinery, interpretive signage, project mapping, pipes, etc.).

The project was completed on schedule and on budget. The total budget for the project was \$153,223, of which \$79,985 was provided by Pacific Salmon Commission (PSC), \$9,030 was provided by the Pacific Salmon Foundation (PSF), \$9,350 was provided by the BC Ministry of Transportation (MOT), and \$55,595 was provided in kind from the Fraser Valley Regional Watersheds Coalition/District and Fisheries and Oceans Canada (Appendices A & B). Actual expenditures of the PSC funds closely matched the proposed budget. The most significant deviation was the amount of funding allocated to machine time, which was \$240 over budget. This minor over expenditure was compensated by under spending on small tools and equipment.



Monitoring results indicate that the project is already being utilized by adult and juvenile coho salmon. Adult coho were observed in the newly constructed spawning channels by hatchery staff on several occasions. In addition, several pairs of coho salmon were observed spawning in Pierce Creek immediately downstream of one of the newly constructed ponds on December 21, 2006 (Figure 8).

**Figure 8** Spawning coho salmon



Minnow trapping conducted in the spring demonstrates that the new ponds are already providing habitat for juvenile coho salmon (*Oncorhynchus kisutch*), cutthroat trout (*Oncorhynchus clarki*), and Dolly Varden char (*Salvelinus malma*). A total of 61 coho smolts, three Dolly Varden char, and eight cutthroat trout were caught in pond #2 and one cutthroat trout was caught in the new pond #1. Numerous coho fry released in several of the new ponds by DFO hatchery staff in late March were observed during the sampling period, but none were caught in the traps due to the large mesh size used.

Monitoring efforts also showed that the ponds provide habitat for several other species, including great blue herons (*Ardea Herodias*), Canada geese (*Branta Canadensis*), common mergansers (*Mergus merganser*), red-legged frogs (*Rana aurora*), Northwestern salamanders (*Ambystoma gracile*), and long-toed salamanders (*Ambystoma macrodactylum*).

## Discussion

This project exceeded the original expected outcomes. An additional \$18,380 was leveraged from two additional funding partners. This allowed the amount of habitat created or made accessible through this project to meet or exceed project objectives. For example, 500 m<sup>2</sup> spawning habitat was made accessible to coho as expected, and 15,000 m<sup>2</sup> of overwintering habitat was created, which exceeded the anticipated amount of 9,000 m<sup>2</sup>. This additional habitat was constructed in an extremely cost effective manner.

Given its location outside of the current river floodplain, this project can be expected to persist for 50 years or more. The stability of the project was highlighted by the fact that the project was not negatively impacted by the extreme high flows experienced in the Chilliwack River Watershed in November 2006, which were equivalent to a 1 in 40 year event.

Preliminary monitoring indicates that the new ponds are already being used by both adult and juvenile coho salmon, as well as other aquatic species. While juvenile trapping suggests that utilization of the newly created pond #1 was, not surprisingly, relatively low immediately following construction, greater utilization of this pond is expected as it matures. In addition, efforts by hatchery staff (e.g., adult carcass placements and juvenile wild coho releases) will speed up production at this site. The data collected this spring provides excellent baseline data for monitoring project success over time and will be invaluable for developing future monitoring protocols for the site.

Until accurate estimates of the total number of salmon utilizing these ponds are available from a mark recapture or outgoing smolt survey, previous research can be used to estimate the anticipated production of the new habitat. Given an expected lifespan of 50 years, the additional 15,000 m<sup>2</sup> of habitat created through this project can be expected to produce 360,000 wild coho salmon smolts over this period. This is a conservative estimate of coho smolt production (e.g., 0.48 smolts/m<sup>2</sup> habitat), which is based on studies of coho smolt production from other off-channel ponds developed in the Chilliwack River Valley (Fisheries and Oceans Canada 1999).

The salmon produced from habitat created in this project will improve the productivity of wild coho in the Chilliwack River Watershed and will assist in sustaining wild coho salmon populations over the long term. In addition to improving natural productivity of coho stocks, this project will also assist in buffering any negative effects that may occur from hatchery production of this important lower Fraser River coho salmon population.

## **Conclusions and Recommendations**

Overall, this project was a success. The funding provided by Pacific Salmon Commission was used to leverage additional funding, which enabled the projected amount of new habitat to be exceeded by 66%. In addition, many materials were salvaged from the local area, which maximized the amount of funding allocated towards machine time for creating additional habitat. The involvement of local partners (e.g., DFO Hatchery and FVRWC staff) in the project ensures that success of the project will be monitored into the future and upgrades/adjustments will be completed as necessary. Preliminary monitoring suggests the project is highly stable and not vulnerable to extreme flood events (e.g., 1 in 40 year events). In addition, the site is already being used by both adult and juvenile coho salmon, and several other fish and wildlife species.

The key benefit of this project is the potential coho salmon production that will occur from the habitat created at the site (e.g., an estimated 360,000 wild coho salmon over 50 years). However, several other benefits were realized. The success of the project contributed to securing a full time watershed coordinator position jointly supported by the Fisheries and Oceans Canada, the Fraser Valley Regional District, and the Fraser Valley Regional Watersheds Coalition. This position, now well established, will contribute to numerous other fish habitat restoration projects throughout the Fraser Valley in the future. The project also contributed to the local economy through the utilization of local contractors (e.g., JR Bulldozing) and consultants (e.g., Taara Environmental), and by purchasing materials locally.



Although the project was successful overall, several improvements could be made in the future. Future efforts should be allocated towards monitoring salmon usage of the site. In addition, there is an opportunity to expand the amount of off-channel pond habitat available to salmon and improve water flows throughout the entire pond complex. Future efforts will also be required to ensure sustainable access for salmon to this site. Staff from the Chilliwack River Hatchery, which is located in close proximity to the site, may be able to assist in these efforts. There is also an opportunity to connect this site to the Trans-Canada Trail, which would make this site more accessible and useful for promoting greater public awareness and conservation of salmon over the long term.

## **References**

EBA Engineering Consultants Ltd. 2001. Chilliwack River watershed restoration plan final report. Produced for Cattermole Timber, Chilliwack, BC.

Fisheries and Oceans Canada. 1999. Smolt Productivity of Off-channel Habitat in the Chilliwack River Watershed 1999, Watershed Restoration Project Report No. 14.

# Appendix A: Financial Statement of Project Expenditures

## ELIGIBLE COSTS

## BUDGET

## OTHER FUNDING

## CONTRIBUTION FUNDING

### Labour

#### Wages & Salaries

Position	# of crew	# of work days	hrs per day	rate per hour	Total (PSC + In-kind + cash)	In-Kind & Cash	PSC Budgeted Amount	PSC Actual Costs
Project Manager	1	25	8	\$50	\$10,000.00	\$2,000.00	\$8,000.00	\$8,000.00
Senior DFO Biologist	1	10	8	\$70	\$5,600.00	\$5,600.00	\$0.00	\$0.00
Senior DFO Engineer	1	10	8	\$80	\$6,400.00	\$6,400.00	\$0.00	\$0.00
Senior DFO Technician	1	40	8	\$50	\$16,000.00	\$16,000.00	\$0.00	\$0.00
Project Assistants	1	8	8	\$30	\$4,782.40	\$2,862.40	\$1,920.00	\$1,920.00
Person Days (# of crew x work days)		93			sub total	\$32,862.40	\$9,920.00	\$9,920.00

#### Labour - Employer Costs ( percent of wages subtotal amount )

rate	19%	sub total	\$7,220.00	\$5,700.00	\$1,884.80	\$1,884.80
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#### Subcontractors & Consultants

	# of crew	# of work days	hrs per day	rate per hour	Total (PSC + In-kind + cash)	In-Kind & Cash	PSC Budgeted Amount	PSC Actual Costs
	0	0	0	\$0	\$0.00	\$0.00	\$0.00	\$0.00
Insurance if applicable	rate	0%				\$0.00	\$0.00	\$0.00
					sub total	\$0.00	\$0.00	\$0.00

	# of crew	# of work days	hrs per day	rate per hour	Total (PSC + In-kind + cash)	In-Kind & Cash	PSC Budgeted Amount	PSC Actual Costs
Skilled	0	0	0	\$30	\$0.00	\$0.00	\$0.00	\$0.00
Un-skilled	4	4	8	\$15	\$1,920.00	\$1,920.00	\$0.00	\$0.00
Insurance if applicable	rate	0%				\$0.00	\$0.00	\$0.00
					sub total	\$1,920.00	\$0.00	\$0.00

**Total Labour Costs**      **\$51,922.40**      **\$40,482.40**      **\$11,804.80**      **\$11,804.80**

#### Site / Project Costs      Detail (use additional page for details if needed )

Travel (not including to/from work, Vehicle lease, insurance & maintenance for 1 yr)		\$4,550.00	\$4,550.00	\$0.00	-
Small Tools & Equipment	Pumps, rakes, shovels, survey equipment	\$1,000.00	\$500.00	\$500.00	\$264.93
	-shovels, rakes, clippers				\$100.63
	-temperature logger				\$164.30
Site Supplies & Materials	Wood, culverts, rock, gravel, seed, interpretive	\$4,500.00	\$389.25	\$4,500.00	\$4,479.02
	-2 steel culverts				\$3,005.28
	-couplers				\$78.69
	-rock and gravel				\$881.68
	-seed				\$417.20
	-end cap for pipe				\$96.17
Equipment Rental	Excavator, bulldozer, articulated truck	\$77,375.75	\$15,125.75	\$62,250.00	\$62,490.23
	-excavator and move				\$3,854.68
	-excavator and dozer				\$14,653.65
	-rock trucks and move				\$13,785.75
	-excavator, dozer and move				\$15,844.35
	-rock trucks and move				\$14,351.80
Work & Safety Gear	Safety vests, work boots, hard hat, first aid kits,	\$500.00	\$0.00	\$500.00	\$518.79
	-safety hat and vest				\$57.68
	-waders				\$113.99
	-rain gear and flagging tape				\$203.01
	-waders & supplies				\$144.11

Repairs & Maintenance	Repairs & maintenance	\$0.00	\$0.00	\$0.00	\$0.00
Permits	Permits	\$0.00	\$0.00	\$25.00	\$25.00
	-permit to collect fish for science				\$25.00
Technical Monitoring	Thermistors, field books, camera	\$1,000.00	\$750.00	\$250.00	\$102.92
	-write in the rain paper and book				\$37.91
	-supplies for traps				\$10.77
	-folding ruler & rite in the rain paper				\$54.24
Other site costs	Miscellaneous	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total Site / Project Costs</b>		<b>\$88,925.75</b>	<b>\$21,315.00</b>	<b>\$68,000.00</b>	<b>\$67,880.89</b>

**ELIGIBLE COSTS**

**BUDGET**

**OTHER FUNDING**

**CONTRIBUTION FUNDING**

<b>Training (e.g Swiftwater, bear aware, electrofishing, etc).</b>				<b>Total (PSC + In-kind + cash)</b>	<b>In-Kind &amp; Cash</b>	<b>PSC Budgeted Amount</b>	<b>PSC Actual Costs</b>
Name of course	# of crew	# of days		\$0.00	\$0.00	\$0.00	\$0.00
				\$0.00	\$0.00	\$0.00	\$0.00
<b>Total Training Costs</b>				<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

**Overhead / Indirect Costs (not to exceed 20% of PSC Amount)**

Office space; including utilities, et	Rough estimate of shared office space	\$7,500.00	\$7,500.00	\$0.00	\$0.00
Insurance		\$2,000.00	\$2,000.00	\$0.00	\$0.00
Office supplies	Materials for project manager, incl. computer &	\$1,500.00	\$1,500.00	\$0.00	\$0.00
Telephone & long Distance	Based on the cost of a cell phone for 15 months	\$675.00	\$675.00	\$0.00	\$0.00
Photocopies & printing	Maps, drawings, reports, ink, etc.	\$200.00	\$0.00	\$200.00	\$300.00
	-photocopies and printing				\$300.00
Other overhead costs	Miscellaneous	\$500.00	\$500.00	\$0.00	\$0.00
<b>Total Overhead Costs</b>		<b>\$12,375.00</b>	<b>\$12,175.00</b>	<b>\$200.00</b>	<b>\$300.00</b>

**Capital Costs / Assets Detail (use additional page for details if needed)**

Assets are things of value that have an initial cost of \$250 CAN or more and which can be readily misappropriated for personal use or gain or which are not, or will not be, fully consumed during the term of the project.

	\$0.00	\$0.00	\$0.00	\$0.00
	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total Capital Costs</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

**Project Total Costs** **\$153,223.15**    **\$73,972.40**    **\$80,004.80**    **\$79,985.69**

**Budget Summary**

(PSC + in-kind + cash)

Total Labour Costs	51,922
Total Site / Project Costs	88,926
Total Training Costs	-
Total Overhead Costs	12,375
Total Capital Costs	-
<b>Project Total</b>	<b>153,223</b>

I, Richard Bunbury, Treasurer for the Fraser Valley Regional Watersheds Coalition, have reviewed and approve of this financial statement.

Signed: Richard Bunbury on the 1st of May, 2007.

## Appendix B: Summary of Additional Grants and In Kind Funding

### Labour

Service	Type	Source	Amount
Project Manager	In kind	Fraser Valley Regional District	\$2,000
Senior Biologist	In kind	Fisheries and Oceans Canada	\$5,600
Senior Engineer	In kind	Fisheries and Oceans Canada	\$6,400
DFO Technician	In kind	Fisheries and Oceans Canada	\$16,000
Project Assistant (Taara Environ't'l)	Cash grant	Fraser Salmon and Watersheds Program	\$1,102.40
Project Assistant (Flaggers)	Cash grant	Fraser Salmon and Watersheds Program	\$1,760.00
Project volunteers	In kind	Fraser Valley Regional Watersheds Coalition	\$1,920
Employer costs	In kind	FVRD/DFO	\$5,700
<b>Total</b>			<b>\$40,482.40</b>

### Materials & Equipment

Item	Details	Type	Source	Amount
Travel	Lease, insurance and gas	In kind	FVRD	\$4,550.00
Technical Monitoring	Traps, camera, etc.	In kind	FVRD/FVRWC/DFO	\$750.00
Small tools	Survey equipment, shovels	In kind	FVRD/DFO	\$500.00
Equipment Rental	200 Excavator & moves	Cash grant	BC Ministry of Transportation	\$9,348.75
	200 Excavator & moves	Cash grant	Fraser Salmon and Watersheds Program	\$5,777.00
Site Materials	Seed	Cash grant	Fraser Salmon and Watersheds Program	\$154.34
	Interpretive signs	Cash grant	Fraser Salmon and Watersheds Program	\$98.64
	Recycled plastic sign bases	Cash grant	Fraser Salmon and Watersheds Program	\$136.27
<b>Total</b>				<b>\$21,315.00</b>

### Overhead/Indirect Costs

Item	Details	Type	Source	Amount
Office space	Rough estimate of shared office space, utilities, etc.	In kind	FVRD	\$7,500.00
Insurance		In kind	FVRD	\$2,000.00
Office supplies	Materials for project manager, incl. computer & printer	In kind	FVRD	\$1,500.00
Telephone	Based on the cost of a cell phone for 15 months	In kind	FVRD	\$675.00
Other overhead costs	Miscellaneous	In kind	FVRD	\$500.00
<b>Total</b>				<b>\$12,175.00</b>

<b>TOTAL ADDITIONAL GRANT &amp; IN KIND FUNDING</b>	<b>\$73,972</b>
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